

The Effects of a Cognitive-Behavioral Skills Building Intervention on Hispanic Adolescents' Physical Activity and Body Mass Index

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Abstract

Obesity is a major health condition affecting Hispanic adolescents in the United States. Over the past 30 years, the overweight/obesity rate among children and adolescents has more than tripled (Bode et Al., 2013). As calculated in 2009, 34% of Hispanic adolescents were either overweight or obese (Suglia et Al., 2012). However, little research has been conducted to determine the effectiveness of interventions promoting healthy lifestyles in Hispanic teenagers. **Purpose:** The purpose of this study was to analyze the efficacy of a cognitive-behavioral skills building intervention, COPE (Creating Opportunities for Personal Empowerment) Healthy Lifestyles TEEN (Thinking, Emotions, Exercise, Nutrition) versus an attention control health promotion intervention, Healthy Teens, on outcomes of healthy lifestyle behaviors and body mass index (BMI) in Hispanic adolescents. **Theoretical Framework:** The study was based on cognitive theory – the concept that one’s thoughts affect a person’s feelings and behaviors. **Subjects:** Data were analyzed from a randomized controlled trial which took place from January 2010 to May 2012 among high school students from the Southwest United States. The sample for this secondary data analysis included 522 Hispanic participants out of a total sample of 779 teens, ages 14 to 17 years. **Methods:** The teenagers were randomly assigned to either the COPE or Healthy Teens intervention. Each intervention consisted of a 15-week program integrated into the teens’ health course one day per week. This study analyzed post-intervention daily pedometer steps and BMI. **Results:** COPE Hispanic teens demonstrated a significant increase in pedometer steps per day compared to those in Healthy Teens ($p = 0.001$). There was no significant change in subsequent BMI for either group. The study analyzed BMI measurements taken immediately after program completion, which may be an inadequate timeframe to detect evidence of change in BMI. **Significance:** Overall, the cognitive behavioral skills building COPE intervention demonstrated an increase in the healthy lifestyle behavior of increasing physical activity, which is important to decrease overweight/obesity rates in Hispanic teens.

Chapter I: Statement of the Problem

Introduction

Obesity is a major health condition that is increasing among American youth. Over the past 30 years, the overweight/obesity rate among children and adolescents in the United States has more than tripled (Bode et al., 2013). Adolescents of minority descent, specifically Hispanic, are at an increased rate of many health disparities, including obesity. As calculated in 2009, 34% of Hispanic adolescents suffered from either overweight or obese status (Suglia et al., 2012). However, little research has been conducted to determine the effectiveness of interventions promoting healthy lifestyles in Hispanic teenagers.

Obesity is a predominant risk factor leading to health disorders such as diabetes and cardiovascular disease (Turer et al., 2012). In addition, there exists a link between mental health factors and physical health status among adolescents and young adults (Hargreaves et al., 2013). As the Hispanic population is at higher risk for becoming overweight and obese, they also are at increased risk for developing associated health conditions.

Background of the Problem

Among adolescents in the United States, the incidence of overweight/obesity is increasing steadily. In 2009 and 2010, 16.9% of American children and adolescents were considered obese, defined as a Body Mass Index (BMI) at or above the 95th percentile for their age group (Ogden et al., 2012). In 2013, it was recorded that the rates of overweight or obese children and adolescents in the United States had more than tripled over the past 30 years (Bode et al., 2013). In general, Hispanics tend to have a higher rate of obesity than any other race, with a 2.7% higher chance for Hispanic males than Caucasian males and 6.5% higher chance for Hispanic females than Caucasian females (Suglia et al., 2012). Likewise, Hispanic children and adolescents are at a higher risk for overweight/obesity than other ethnicities. In 2009, it was calculated that while 17.1% of all adolescents in the United States suffer from overweight/obese status, the percentage is increased to 34% when considering only the Hispanic population (Suglia et al., 2012).

A relationship exists between lifestyle practices, BMI, and psychosocial problems in children and adolescents (Melnik et al., 2013). However, few studies have been performed to test interventions designed to target the combination of healthy lifestyle behaviors, BMI, and mental health. As obesity and mental health disorders are an increasing problem with Hispanic teenagers in the United States it is important to find an effective intervention to promote healthy lifestyles in these children and adolescents.

Purpose of the Study

The purpose of this secondary data analysis study was to evaluate the efficacy of a cognitive behavioral intervention, COPE (Creating Opportunities for Personal Empowerment) Healthy Lifestyles TEEN (Thinking, Emotions, Exercise, Nutrition) versus an attention control health promotion intervention, Healthy Teens, on the outcomes of healthy lifestyle behaviors and body mass index (BMI) in Hispanic adolescents. Both interventions involved a 15-week program which was incorporated into the participant's high school health course. It is important to evaluate programs in order to discover an effective intervention against the increasing rates of overweight and obesity among Hispanic teenagers.

Significance of the Study

Analyzing the efficacy of a cognitive-based intervention to promote healthy lifestyle behaviors in Hispanic adolescents is an important contribution to health promotion in these teens. As previously stated, there is a correlation between mental health status and physical health status in adolescents. The results of this study demonstrate that improving healthy lifestyle behaviors in these teenagers involves more than simply educating the students on the topic of healthy lifestyle behaviors. In contrast, it is crucial to target the mental health of these teenagers and promote positive thinking so that these healthy lifestyles will be carried out.

It is important to intervene at the adolescent level as this age is a developmental period in which teenagers carry learned behaviors into adulthood. Many health conditions that adolescents face are preventable. Healthy People 2020 acknowledges the importance of interventions at the teenage level in order to promote healthy habits among adolescents in the United States (US HHS, 2013). In addition, Healthy People 2020 also addresses the growing minority of the Hispanic population among teenagers in

the United States and the increased health risk that this population faces (US HHS, 2013). With the increasing population rate of Hispanic teenagers and associated risk of health disparities, promoting an effective intervention in these teenagers is a crucial step to improving the health of our youth.

Conceptual Frame of Reference

The basis of the study revolves around cognitive theory. Cognitive theory is the concept that one's thoughts affect a person's feelings and behaviors. Thus, it is proposed that if an intervention targets one's thoughts, this will create a change in one's feelings and ultimately lead to a change in one's behavior. This idea is incorporated into the COPE intervention through the concept of the program, which encourages positive thinking and emotions about the teenager's ability to carry out healthy lifestyle behaviors. Positive thinking and feelings were promoted through daily exercise activities and recording of daily pedometer steps. These activities were utilized not simply to encourage exercise but to demonstrate to the adolescents that they are indeed capable of performing and maintaining regular exercise activities.

Research Questions

- 1.) In high school Hispanic adolescents, how does a cognitive behavioral intervention (COPE) versus an attention control health promotion intervention (Healthy Teens) impact healthy lifestyle behaviors? The outcome of healthy lifestyle behaviors was measured with a self-reported track of daily pedometer steps.
- 2.) In high school Hispanic adolescents, how does a cognitive behavioral intervention (COPE) versus an attention control health promotion intervention (Healthy Teens) impact BMI? The outcome of BMI was measured by calculating body mass index percentile for each participant based off of their height and weight.

Definition of Terms

- 1.) Body Mass Index (BMI): defined as a measure of body fat based on the weight and height of an individual. In children and adolescents, categorization of BMI takes into account both gender and age.

- 2.) Overweight: defined as a BMI greater than the 85th percentile and less than the 95th percentile for the individual's age group.
- 3.) Obese: defined as at or above the 95th percentile for the individual's age group.
- 4.) Randomized Controlled Trial: a study design which randomly assigns participants into an experimental group or a control group. This is considered the gold standard of clinical trials.

Limitations

This secondary data analysis analyzed data only at pre- and immediate post- intervention times. Thus, outcomes were calculated with only a 15-week time difference, which is an inadequate timeframe to see changes in BMI. In the future, data should be analyzed based on long-term findings at 6 month and 12 month post-intervention intervals. Another limitation is that the study relied on school teachers to deliver the intervention. Teachers were educated on the COPE intervention, but outcomes relied on their ability to maintain fidelity in delivering the intervention. Finally, the outcome of pedometer steps was based off of self-reported data and is reliant on the accuracy of student reporting.

Chapter II: Review of the Literature

Introduction

For the purposes of this study, literature was collected and reviewed from health databases including PubMed, Medline, CINAHL, and The Cochrane Library of Systematic Reviews. The following chapter will discuss the complications of obesity, prevalence of obesity among Hispanic youth, mental health disorders in Hispanic adolescents, the relationship between obesity and mental health, and interventions already targeted toward these health conditions among American teenagers. In addition, this chapter will address the lack of available evidence regarding effective intervention specifically toward the ethnic minority of Hispanic adolescents. From this review, it is evident that there is a need for further research to promote effective culturally-appropriate interventions into the American youth.

Complications of Obesity

Obesity is a growing concern worldwide and is specifically a problem in the United States. It is well-known that obesity leads to multiple complications and health conditions. Specifically, obesity is associated with an increased risk of diabetes mellitus, hypertension, dyslipidemia, heart disease, and higher mortality rates (Malnick et al., 2006). Additionally, obesity is becoming more and more prevalent among United States youth and is linked to sedentary lifestyles and psychosocial status. Over the past 30 years, obesity rates have more than tripled among adolescents in the United States (Bode et al., 2013)

Prevalence of Obesity among Hispanic Adolescents

Adolescents of minority ethnicities struggle with an increased risk of certain health conditions. Healthy People 2020 acknowledges the growing ethnic diversity among youth in the United States and the rapid increase of Hispanic teenagers in America (US HHS, 2013). Healthy People 2020 also has established the importance of interventions to promote healthy lifestyles among adolescents (US HHS, 2013). Obesity is an example of one of the health conditions in which Hispanics are at an increased risk. While 17.1% of the adolescent population in the United States is considered overweight or obese, this percentage is increased to 34% when specifically addressing only Hispanic teenagers (Suglia et al., 2012).

Mental Health in Adolescents

Another growing health concern in American adolescents involves mental health issues, such as depression or anxiety. In 2009, about 15 million adolescents in the United States faced some sort of mental health disorder (Melnyk et al., 2009). Not only is the rate of mental illnesses alarmingly high, the available mental health care is not sufficient to meet the needs of these disorders. In fact, less than 35% of these adolescents have received proper care or recognition of their symptoms (DiMarco and Melnyk, 2009). As overweight/obesity and mental health disorders become more prevalent, more studies are arising to examine the relationship between the two problems. Furthermore, interventions are being targeted at both topics individually to improve mental health and promote weight loss in children and adolescents. However, rarely are interventions targeted at both of these disorders combined.

Relationship between Mental Health and Physical Health

Suggested evidence is already available that there exists a relationship between mental health factors and physical health status among adolescents and young adults. Research has been conducted to view the association between individual factors (self-esteem, confidence, etc.) and social factors (family, peers, etc.) compared to certain physical aspects of health (weight, eating habits, activity levels, etc.). It was found that both individual and social factors had a positive association when compared to general health factors (Hargreaves et al., 2013). In addition, researchers have compared the relationships among mental health and attitudes to unhealthy behaviors and overweight/obese status. Melnyk et al. published a study based off of the Cognitive Theory demonstrating the idea that people with negative emotions and beliefs have negative behaviors. Therefore, these people are less likely to participate in positive healthy lifestyles (Melnik et al., 2006). The study involved 23 adolescents, all with a BMI equal to or greater than 25. The program was set up to study participants' depressive symptoms, anxiety, self-esteem levels, beliefs, confidence, healthy attitudes, choices, and behaviors. The results of the trial showed positive feedback regarding the impact of including a cognitive behavioral intervention into clinical practice with teenagers. It was evident that a relationship existed between those who showed negative mental health status and those who were less likely to participate in healthy activities (Melnik et al. 2006). More research is needed in order to further enhance the knowledge of this relationship and the success of interventional programs.

As mentioned previously, there is existing evidence that Hispanics have an increased rate of overweight/obese status. Therefore, it is important to determine the relationships of mental status in comparison to healthy lifestyles and increased BMI specifically among the Hispanic ethnicity. Research experts have examined relationships of overweight/obesity to symptoms of depression in adolescents of both Asian and Hispanic descent. Examiners pointed out that those adolescents who were considered overweight had lower self-esteem and discontent with body image as well as more symptoms of depression (Xie et al., 2010). This portrays the evidence that overweight/obesity often corresponds with mental health disorders in adolescents. The study did not find evidence of significant differences between

the Asian and Hispanic populations. However, the study was limited in that it only compared participants of these two races and did not include children of different ethnicities, such as Caucasian or African American (Xie et al., 2010).

Review of Obesity Prevention Interventions

Listed in the Cochrane Library Database is a systematic review that focuses specifically on interventions for Hispanic youth obesity entitled, “Obesity Prevention Interventions for Middle School-Age Children of Ethnic Minority: A Review of the Literature” by Carol J Stevens (Stevens, 2010). This review examined eight studies with a total of 9,621 Hispanic participants ranging from ages 10 to 14 (Stevens, 2010). The review stated that the majority of the studies demonstrated that interventions targeted at mental health, knowledge, and self-esteem had a positive effect on dietary choices. Factors that were found to have a specific influence among youth included behavioral strategies that increase self-esteem and motivation, exposure to sedentary behaviors, and parental inclusion into the intervention (Stevens, 2010). In addition, it was determined that teenagers who exercised regularly demonstrated positive self-esteem. Interventions which provided motivation from self-assessment feedback resulted in more positive outcomes (Stevens, 2010). Additionally, incorporating obesity prevention into existing school curriculum demonstrated success with large populations (Stevens, 2010).

However, the review acknowledged that the studies failed to demonstrate the differences in ethnicity in response to the interventions, as most of the studies did not report the full ethnic mix (Stevens CJ, 2010). The author acknowledges the review’s failure to identify interventions which were effective in Hispanic adolescents or other ethnic minorities. Stevens writes that while evidence is available to support multicomponent obesity prevention interventions across large populations, further research is needed to determine effective intervention strategies specific to minority populations (Stevens, 2010). Although the review focuses majorly on the middle school age population, certain studies which were included in the data also involved adolescents (Stevens, 2010).

Through a review of the literature, it was found that many other limitations exist in the previous interventions designed toward decreasing obesity in adolescents. These limitations include a lack of

comparison groups and a deficiency of long-term outcome data (Melnik et al., 2013). With a growing incidence of obesity in Hispanic adolescents and a limited amount of available evidence promoting effective interventions, it is important to develop further studies to enhance Hispanic adolescent health.

Background of the COPE Healthy Lifestyles TEEN Program

The cognitive behavioral COPE (Creating Opportunities for Personal Empowerment) Healthy Lifestyles TEEN (Thinking, Emotions, Exercise, Nutrition) intervention was designed by Dr. Bernadette Melnyk with the objective of incorporating a mental health component into lifestyle behavior interventions (Melnik et al., 2013). Multiple pilot studies were performed prior to the full-scale clinical trial that was used for this secondary data analysis. One pilot study of the program was performed on a collection of students from a predominantly Hispanic urban school (Melnik et al., 2009). The study acknowledged the limitation of time constraints to identify change in BMI, but showed high rates of acceptance from Hispanic adolescents, positive effects on depression and anxiety, as well as an increase in HDL cholesterol (good cholesterol) in comparison to LDL (bad cholesterol). As this pilot study included only a small sample of the Hispanic adolescent population, further evidence is needed to enhance the knowledge of the intervention effects on the teenage Hispanic population (Melnik et al., 2009).

After the success of the pilot studies, COPE was incorporated into a large-scale randomized controlled trial implemented into the school curriculum at 11 different high schools from two school districts in the Southwestern United States. The data analyzed for this study comes from the results of this randomized controlled trial. The full study involved 779 culturally-diverse participants. The study randomly assigned schools to either the COPE intervention or the Healthy Teens program. Each intervention program lasted 15 weeks, with intervention sessions being delivered once a week over the course of the semester.

Chapter Summary

Evidence from studies, as listed above, is available to discuss the differences in relationships of mental health and overweight/obesity rates in comparison to unhealthy habits and behaviors. Numerous

studies focus on the effects of interventions aimed toward decreasing rates of mental health issues as well as the rates of overweight/obesity in American adolescents as a whole. However, there is a lack of existing evidence relating the response of interventions targeted towards these unhealthy behaviors, overweight/obesity rates, and mental health disorders, specifically in Hispanic teenagers versus other ethnicities. Thus, further research must be conducted to determine the effectiveness of interventions directed toward Hispanic adolescents, as evidence suggests that this ethnic minority is more prone to obesity and mental health issues when compared to other groups. The factors that effectively promote culturally-specific interventions must be identified in order to enhance the future interventions designed specifically for Hispanic adolescents.

Chapter III: Methodology

Research Design

Data was collected from a randomized controlled trial conducted in 11 high schools from two school districts in the Southwestern United States. Participants and their parents were provided information regarding the study and parental consent for each participant was obtained. Students were enrolled into either the COPE Intervention or the attention control Healthy Teens group. The intervention took place between January 2010 and December 2012. Health teachers were educated on the programs in order to effectively deliver the intervention to the students. Each program involved a 15-week intervention, with weekly sessions implemented into the students' health courses. Both programs provided an educational manual and homework assignments. Four times during the semester, a newsletter was sent home describing the content of the program, which the teenagers were instructed to review with their parents.

The COPE Healthy Lifestyles TEEN program is a cognitive-based learning intervention designed to incorporate a psychosocial approach to healthy lifestyle promotion and obesity prevention. The COPE program included brief periods (i.e., 20 minutes) of physical activity into each session, such as walking, dancing, or kickboxing. These exercises were intended to increase teens' beliefs that they are capable of

engaging in regular exercise. COPE students were instructed to keep a tracking sheet of daily pedometer steps and were encouraged to increase their steps by 10 percent each week. Allowing the students to keep a tracked record of their steps helped teens to recognize each week if they were meeting this goal. A full list of the weekly COPE topics is provided at the end of this report (Table 1).

The Healthy Teens program was implemented to control for the time that was spent delivering the COPE intervention. This program addressed common health topics such as safety, dental care, infectious diseases, immunizations, and skin care. While the COPE participants kept a log of daily pedometer steps throughout the entire program, the Healthy Teens group recorded pedometer steps only during the first and last week of the program.

Population and Sample Design

Data was obtained from the large-scale randomized controlled trial involving a culturally diverse population. From the total data, this study narrowed the sample to use those participants who specifically identified themselves as Hispanic.

Outcomes

The study analyzed healthy lifestyle behaviors, measured through daily pedometer steps. Additionally, the physical outcome of teen BMI percentile was analyzed through collection of teen height and weight. Data was collected first at week zero (baseline) and then at week 14 (post-intervention). BMI is calculated by dividing mass (in kilograms) by height (in meters) squared (CDC, 2011). The BMI percentile is then determined by plotting BMI on a CDC-approved BMI-for-age growth chart (CDC, 2011)

Data Collection Procedures

Self-reported data was gathered for demographic information, including ethnic identification. Pedometer steps were recorded and reported by the participants. COPE students tracked daily pedometer steps each week throughout the program, while Healthy Teens students measured daily pedometer steps only at baseline and post-intervention. BMI was calculated by obtaining height and weight, and BMI percentile was controlled for age and gender.

Data Collection Instruments

To measure daily steps, a Yamex SW-200 Pedometer was used, which is considered the standard in healthcare due to its accuracy. Daily pedometer steps were recorded by the participants. To calculate BMI, the height and weight of each student were obtained in a private area. Shoes and outer wear were removed to obtain accurate measurements. The teens were weighed by use of a Tanita scale, calculated to the nearest hundredth of a kilogram. Height was measured with a stadiometer with the teens' back toward the stadiometer and was measured to the nearest hundredth of a centimeter. BMI percentile was calculated specific for age and gender based on CDC growth charts (Melnik et al., 2013).

Data Analysis

Representativeness of Sample

A Lavene's test for equality of variances was performed on the two groups to ensure adequate comparability of data between the two programs.

Profile of Sample

The study takes into account demographic data including gender, age, grade level, and ethnicity.

Research Questions

- 1.) In high school Hispanic adolescents, how does a cognitive behavioral intervention (COPE) versus an attention control health promotion intervention (Healthy Teens) impact healthy lifestyle behaviors? The outcome of healthy lifestyle behaviors was measured through daily pedometer steps. Teens wore a pedometer and kept a written log of daily steps.
- 2.) In high school Hispanic adolescents, how does a cognitive behavioral intervention (COPE) versus an attention control health promotion intervention (Healthy Teens) impact BMI? The outcome of BMI was measured through calculation of body mass index for each participant based off of their height and weight. The body mass index percentile was then calculated by charting the teens' BMI on a BMI-for-age chart.

Level of Significance

The significance level used to analyze the data was 0.05.

Chapter Summary

The data analysis involved 522 self-identified Hispanic participants randomly assigned to either the COPE or Healthy Teens program. Data collected and analyzed included a healthy lifestyle measure of daily pedometer steps and BMI calculated at baseline and post-intervention.

Chapter IV: Research Results**Representativeness of Sample**

The performed Lavene's test of equality of variances provided adequate results to compare the two sets of data.

Profile of Sample

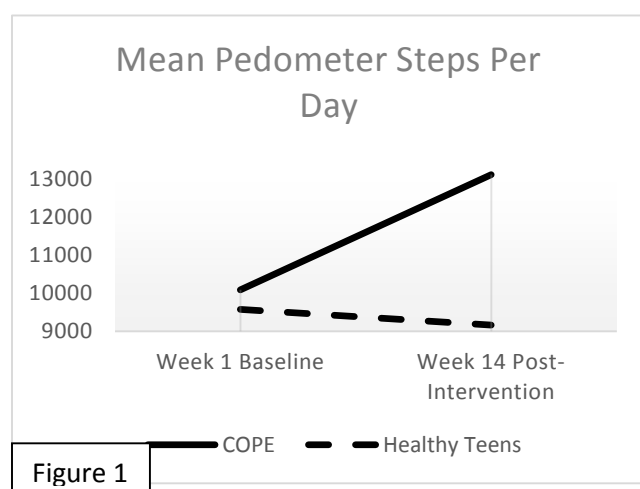
The study analyzed data from 522 total Hispanic teenagers who participated in the intervention. The ages of the participants ranged from 14 to 17 years old, and grade levels ranged from 9th to 12th grade. A total of 271 students were assigned to the COPE Program, while 251 teens partook in the Healthy Teens attention control group. Among COPE students, 45.8% were male and 54.2% were female. Among Healthy Teens participants, 51.0% were male while 49.0% were female. A full list of demographic data of the sample is provided at the end of this report (Table 2).

Response Rate of Sample

Among the COPE students, 214 (80.0%) responses were obtained for pedometer steps at baseline, while 101 (47.2%) were obtained post-intervention. The Healthy Teens response rate for pedometer steps included 151 (60.2%) at baseline and 83 (33.1%) post-intervention. For BMI, the COPE program collected data from 250 (99.6%) participants at baseline and 239 (88.2%) post intervention. BMI was calculated for 270 (99.6%) of the Healthy Teens participants at baseline and 219 (87.3%) of the participants post-intervention.

Results

A t-test was used to compare the differences in data between COPE and Healthy Teens participants at baseline and post-intervention. Data was inputted into the Statistical Package for Social Sciences (SPSS) software to obtain the data analysis. COPE teenagers demonstrated a statistically significant increase in pedometer steps per day compared to those in Healthy Teens ($p=0.001$). This difference in daily pedometer steps for each group is represented in *Figure 1* below.



At baseline, COPE teens averaged 10,088.84 steps per day. Post-intervention, the average daily pedometer steps for COPE participants increased to 13,110.99 steps. Healthy Teens participants' average daily pedometer steps at baseline was calculated as 9,576.41 steps. After the intervention, this average decreased slightly to 9,161.84 steps per day.

There was no significant difference among BMI noted from the post-baseline data among the two groups. At baseline, the mean BMI percentile for COPE teens was 74.7526 while baseline mean BMI percentile was 70.3802 for Healthy Teens participants. At post-intervention, the mean BMI percentile for COPE teens was 75.3150. Healthy Teens mean BMI percentile post-intervention was calculated at 70.6514. A full listing of the results is recorded in Table 3 at the end of this report.

Research Questions

- 1.) In high school Hispanic adolescents, how does a cognitive behavioral intervention (COPE) versus an attention control health promotion intervention (Healthy Teens) impact healthy lifestyle behaviors? This question was answered through the daily pedometer steps results. The significant increase in daily pedometer steps demonstrated by the COPE participants, when compared to the slight decline in pedometer steps of the Healthy Teens group, suggests

that a cognitive behavioral intervention has a positive impact on healthy lifestyle behaviors in high school Hispanic adolescents. The analysis T-test conducted on the pedometer step results of each group confirmed that the difference between the two groups was significant after the intervention.

- 2.) In high school Hispanic adolescents, how does a cognitive behavioral intervention (COPE) versus an attention control health promotion intervention (Healthy Teens) impact BMI? The outcome of BMI will be measured by calculating body mass index percentile for each participant based off of their height and weight. The results of BMI percentile suggest that there was no change among the participants' BMI. However, this was an inadequate timeframe to see significant changes in BMI.

Chapter Summary

COPE teens demonstrated a significant increase in healthy lifestyle behaviors, or pedometer steps, compared to those in Healthy Teens. There was no significant difference in BMI among the two groups.

Chapter V: Conclusions and Recommendations

Summary of Findings

The findings of this secondary data analysis indicate that a cognitive behavioral skills intervention such as COPE has a positive impact on healthy lifestyle behaviors in Hispanic adolescents. This was shown through the significant increase in pedometer steps from the start of the intervention to the end when compared to the attention control group. However, there were no BMI differences between the two groups immediately post-intervention. Fifteen weeks is not a sufficient time to see significant changes in weight and, thus, BMI. It is suggested that the increase in healthy lifestyle behaviors will help to lower BMI in the future or prevent teens from progressing from one BMI category to the next (i.e. normal weight to overweight). Long-term outcome data at 6 or 12 months should be analyzed to

determine if the increased physical activity that was found in the COPE group would have a positive impact on BMI over time.

Conclusions

The results of this analysis provide an important indicator of an effective intervention in Hispanic adolescents. As the results of the study suggest, the use of a cognitive behavioral skills building intervention in Hispanic adolescents effectively promotes healthy lifestyle behaviors through the implementation of a psychosocial intervention. As discussed previously, there is a major deficiency in the research regarding evidence of effective intervention strategies that are culturally appropriate for ethnic minorities in the United States. The analysis of the COPE study data in regard to Hispanic adolescents begins to close the gap of the missing research.

Implications of This Study

As the Hispanic population among adolescents increases steadily, it is important to discover and apply new evidence when promoting healthy lifestyle interventions among Hispanic teenagers. The results of the COPE study suggest that a cognitive behavioral intervention is an effective way to promote healthy lifestyle behaviors in Hispanic teenagers. As Hispanics face an increased risk of obesity and the associated health conditions, it is crucial to find and utilize an effective intervention to lower this risk. The sedentary lifestyle that is associated among American teenagers further raises the risk of obesity in teenagers.

Although a significant change was not detected in BMI in this analysis, it is believed that increasing the healthy lifestyle behaviors in these teenagers will have a positive long-term effect on weight and BMI. It is important not only to lower the BMI of teenagers who already fall in the overweight or obese category, but to also prevent other teenagers from moving up into these categories. In addition, as a correlation exists between mental health and physical health, targeting the psychosocial aspect effectively helps to increase healthy lifestyle behaviors as shown by the COPE program. Hispanics are at an increased risk for both mental health disorders and obesity. Through this analysis, it is evident that a cognitive behavioral intervention that targets the emotions of Hispanic teenagers also helps to improve

their lifestyles.

In addition to improving rates of obesity among Hispanic adolescents, this study suggests that a cognitive behavioral intervention could potentially be used to promote other healthy lifestyles in Hispanic teens. For example, a cognitive behavioral intervention could be suggested to help lower rates of alcohol and substance abuse among Hispanic high school students. As a majority of health disparities among Hispanic adolescents are preventable, effective interventions are crucial to reduce the occurrence of these unhealthy conditions.

Recommendations

Based on the findings of this analysis, the efficacy of the COPE program and other cognitive behavioral interventions should be further studied among Hispanic adolescents. First, data from six- and twelve- month intervals post-intervention should be analyzed to determine long-term effects of the program. More cognitive behavioral interventions should be incorporated into predominantly Hispanic adolescent populations to continually promote healthy lifestyles and ultimately decrease obesity rates.

While this study supports the idea that a cognitive behavioral skills building intervention effectively promotes the healthy lifestyle behavior of physical activity, future interventions could be developed to test the efficacy of a cognitive behavioral intervention regarding other healthy lifestyle behaviors among Hispanic adolescents. Topics that could potentially be tested include preventing substance abuse, sexually-transmitted disease and teen pregnancy, motor vehicle accidents, and suicide. Effective health promotion is the key to eliminating obesity and other preventable health disparities among Hispanic teenagers.

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Table 1: COPE Healthy Lifestyles TEEN weekly session content

Session Number	Session Content
1	Introduction of the COPE Healthy Lifestyles TEEN program and goals
2	Healthy Lifestyles and the Thinking, Feeling, Behaving Triangle
3	Self-esteem; positive thinking/self-talk
4	Goal-setting; problem-solving
5	Stress and coping
6	Emotional and behavioral regulation
7	Effective communication; personality and communication styles
8	Barriers to goal progression and overcoming barriers; energy balance; ways to increase physical activity and associated benefits
9	Heart rate; stretching
10	Food groups and a healthy body; stoplight diet; red, yellow, and green
11	Nutrients to build a healthy body; reading labels; effects of media and advertising on food choices
12	Portion sizes; “super-size”; influence of feelings on eating
13	Social eating; strategies for eating during parties, holidays and vacations
14	Snacks; eating out
15	Integration of knowledge and skills to develop a healthy lifestyle plan; putting it all together

Table 2: Demographic data among participants

	COPE	Healthy Teens	Total
Total Hispanic Participants	271	251	522
Gender:			
Male	124 (45.8%)	128 (51.0%)	252 (48.3%)
Female	147 (54.2%)	123 (49.0%)	270 (51.7%)
Grade Level			
9 th Grade	169 (62.4%)	128 (51.0%)	297 (56.9%)
10 th Grade	72 (26.6%)	94 (37.5%)	166 (31.8%)
11 th Grade	28 (10.3%)	26 (10.4%)	54 (10.3%)
12 th Grade	2 (0.7%)	3 (1.1%)	5 (1.0%)

Table 3: Results

	COPE Baseline	Healthy Teens Baseline	COPE Post- intervention	Healthy Teens Post- intervention	T-Test Significance
BMI	25.2518	24.5815	25.2888	24.9298	.527
BMI Percentile	74.7526	70.3802	75.3150	70.6514	.059
Pedometer Steps	10088.8425	9576.4106	13110.9872	9161.8359	.001